National Aeronautics and Space Administration

MARSHALL STAR

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March 12, 2009

Kepler spacecraft rockets to space in search of other Earths

NASA's Kepler mission successfully launched into space from Cape Canaveral Air Force Station, Fla., aboard a United Launch Alliance Delta II at 9:49 p.m. CST, March 6.

Kepler is designed to find the first Earth-size planets orbiting stars at distances where water could pool on the planet's surface. Water is believed to be essential for the formation of life.

Engineers acquired a signal from Kepler at 11:11 a.m. March 7, after it separated from its spent third-stage rocket and entered its final sun-centered orbit, trailing 950 miles behind Earth. The spacecraft is generating its own power from its solar panels.

Engineers have begun to check Kepler to ensure it is

*See **Kepler** on page 4*

STS-119 delivering final set of solar array wings to space station

From combined reports

At Marshall Star press time, space shuttle Discovery was poised for a March 11 launch on the STS-119 mission to the International Space Station. Commander Lee Archambault and his six crewmates were scheduled to lift off at 8:20 p.m. CDT.

Discovery's launch date was announced March 6 following a Flight Readiness Review at the Kennedy Space Center, Fla. During the meeting, top NASA and contractor managers assessed the risks associated with the mission and determined the shuttle's equipment, support systems and procedures were ready for flight.

The review included a formal presentation of the

*See **STS-119** on page 5*

Payload Operations Center in Building 4663

Payload Operations Center at Marshall marks anniversary

By Lori Meggs

March 8 was a very special day for the dedicated men and women who staff the Payload Operations Center at the Marshall Space Flight Center. It marked the eighth anniversary of round-the-clock operations, supporting research on board the International Space Station.

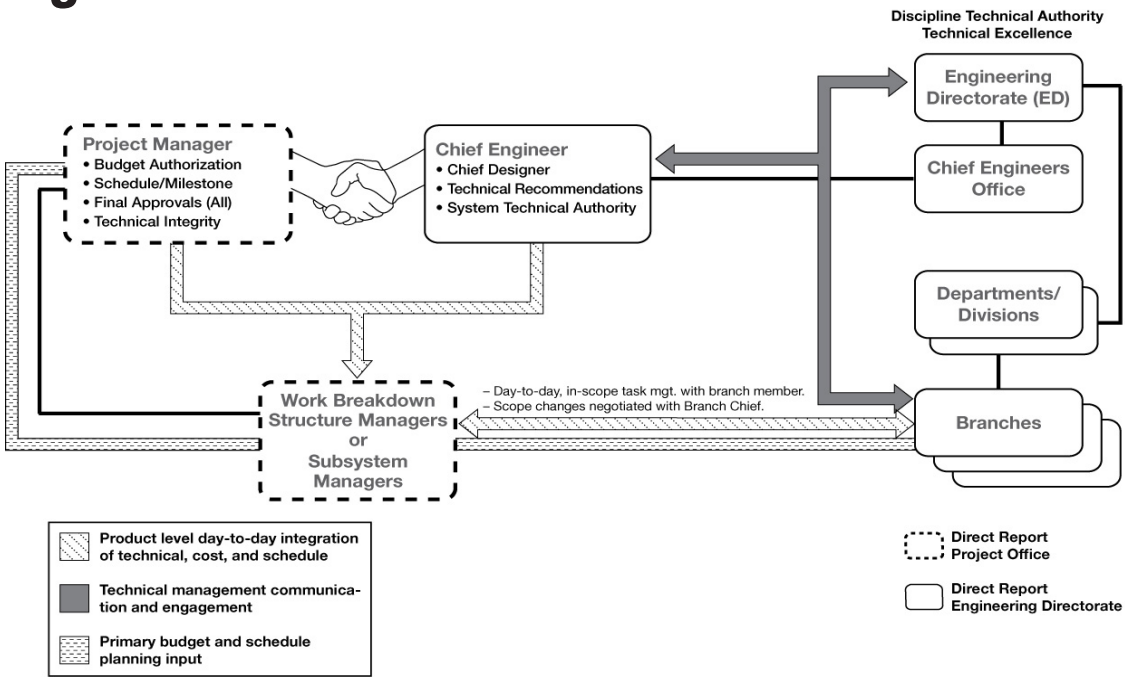
The Payload Operations Center team has been helping crew members aboard

*See **POC** on page 6*

Strengthening the Marshall team

By Susan Turner

An initiative was kicked off the last week of February to strengthen and streamline the Marshall team. This is important because the workforce is at capacity and the Center needs to position itself efficiently for its assigned future work and continued contribution to NASA's mission.



With this in mind, Marshall Deputy Director Robert Lightfoot commissioned a study of the operations models currently used at the Center to find efficiencies and make the most of lessons gained from decades of experience with the Shuttle, from a variety of large and small science projects, and from more than three years of intense work with Ares.

An operations model represents the way business is conducted within an organization and between organizations. The Engineering Directorate and Ares Projects all-hands meeting held in the Morris Auditorium on Feb. 24 kicked off the implementation of a streamlined operations model that has multiple benefits. The main ones are: (1) consistency of practices, (2) simplified accountability and authority, and (3) clarity about how decisions are made and by whom.

According to Robert Lightfoot, "This is an initiative to position Marshall to deliver the best value at a time when demand for our workforce and facilities is high. With shuttle flying, the current Ares I efforts, and Ares V on the horizon, this is the right time to fine-tune our processes and practices on a foundation designed to make our systems more efficient and effective. This benefits both our workforce and customers."

Over the last few months, a team led by Preston Jones, manager of Engineering's Spacecraft and Vehicle Systems Department, and comprised of Engineering department managers, project managers, and Safety and Mission Assurance senior management, studied Marshall's various operations models, including the Shuttle Propulsion Office, Science and Mission Systems Office, and Ares. The resulting information rolled out at the all-hands meeting is the culmination of that analysis and a series of focus groups conducted to refine the initial recommendations made by the study team.

Clarifying roles and responsibilities at a time when the workforce is fully subscribed will offer some relief for those who have been wearing many hats. Steve Cook, Ares Projects Manager, is fully behind this, explaining, "We are committed to supporting our team with resources and processes to bring about a new space exploration system to meet America's needs, delivering technical products that meet requirements for missions to the International Space Station and beyond."

Strong teams are the result of leveraging and balancing the unique skills of all project team members. At Marshall, project teams are composed of members from various organizations. This graphic depicts the relationship among the various members and identifies key responsibilities of project leadership and participants in the resource planning process.

This arrangement leverages and combines the strengths of both Chief Engineers and Project Element Managers. The model clearly requires the Chief Engineer to provide technical leadership, as a partner with the Project Manager, for mission success. The Element Chief Engineers will serve as the focal points for delivery of technical evaluations and solutions to technical issues, while solidifying the role of Project Element Managers as those who provide the budget and schedule and give final approval on technical deliverables.

*See **Engineering** on page 3*

Marshall, Redstone presented with $2,500 for recycling cell phones

Team Redstone, which includes the Marshall Space Flight Center and U.S. Army organizations on Redstone Arsenal, has accepted $2,500 from the City of Huntsville's Operation Green Team for collecting more than 2,452 cell phones. The Operation Green Team works to increase awareness of improved waste handling and encourage environmental efforts.

This recycling effort was for the Wipe Out Wireless Waste campaign held during the Great American Cleanup contest for Keep America Beautiful – the nation's community improvement program.

Team Redstone donated the proceeds to the American Cancer Society's Relay for Life, an event to celebrate survivors and raise money for cancer research.

Ed Kiessling, in the foreground at right, manager of the Safety, Quality and Management Systems Department in the Safety & Mission Assurance Directorate. holds the check presented to Team Redstone. Others at the ceremony are, from left, Shannon Magers, development representative for the American Cancer Society; Margrit Carr, management analyst for the U.S. Army Garrison Department; Julie Bedell, program manager for Honeywell International; Bennie Jacks, management analyst for Marshall's Safety & Mission Assurance Directorate; Col. Bob Pastorelli, U.S. Army Garrison commander; and Huntsville Mayor Tommy Battle.

Engineering

Continued from page 2

"This Center has produced an incredible amount of work to advance the design of our next space transportation system and has a lot in queue," said Dan Dumbacher, Director of Engineering. "We are not about change for change sake but, rather, change that leads to real improvements in the way this Center does business, which benefits everyone." He added, "This is not a reorganization, but a rebalancing, to better serve the needs of the Agency, as well as help our people deliver Ares I and get ready to develop Ares V."

Dumbacher emphasized that, "Integrated solutions are the hallmark of sound engineering. There is more than one right answer for a technical requirement. The important thing is that we make decisions, and that the workforce gets behind them and moves forward. This model sets that expectation."

The timeline for the new model starts with an implementation plan that is being developed by the Ares Element Managers and respective Chief Engineers. A checkpoint the week of March 9 will be followed by a joint findings-and-recommendations report due March 31. The Center Management Council will regularly review implementation progress and results. Future articles will report on the progress of the operations model planning and performance.

Turner is a Technical Assistant to the Engineering Director.

Submissions sought for Earth Day photo contest, Environmental Heroes nominations

The Marshall Space Flight Center Environmental Excellence Team is inviting all Marshall civil servants and contractors to participate in the Earth Day photo contest and to nominate Environmental Heroes. This award recognizes excellence in environmental stewardship through efforts to preserve and protect the environment. The deadline is April 8.

For more information, visit http://inside.msfc.nasa.gov/announcements/ed-photo_sub.html. For questions, contact Jeremiah Kolb at jeremiah.j.kolb@nasa.gov.

MARS Golf League releases '09 tournament schedule

The MARS Golf League has released the 2009 season of tournaments to be held at area golf courses. Tournaments are open to NASA employees, on-site contractors, NASA retirees and dependents.

For more information, contact Michael Nelson, 544-2059; Rick Christenson, 544-8608; or Ryan Decker, 544-3068.

Kepler

Continued from page 1

working properly, a process called "commissioning" that will take about 60 days. In a month or less, NASA will send up commands for Kepler to eject its dust cover and make its first measurements. After another month of calibrating Kepler's single instrument, a wide-field charge-couple device camera, the telescope will begin to search for planets.

The first planets to roll out on the Kepler "assembly line" are expected to be the portly "hot Jupiters" – gas giants that circle close and fast around their stars. NASA's Hubble and Spitzer space telescopes will be able to follow up with these planets and learn more about their atmospheres. Neptune-size planets will most likely be found next, followed by rocky ones as small as Earth. The true Earth analogs – Earth-sized planets orbiting stars like our sun at distances where surface water, and possibly life, could exist – would take at least three years to discover and confirm. Ground-based telescopes also will contribute to the mission by verifying some of the finds.

In the end, Kepler will give us our first look at the frequency of Earth-size planets in our Milky Way galaxy, as well as the frequency of Earth-size planets that could theoretically be habitable.

As the mission progresses, Kepler will drift farther and farther behind Earth in its orbit around the sun. NASA's Spitzer Space Telescope, which was launched into the same orbit more than five years ago, is now more than 62 million miles behind Earth.

The Discovery Program at the Marshall Space Flight Center has oversight responsibility for the Kepler mission. Ames Research Center in Moffett Field, Calif., is the home organization of the science principal investigator and is responsible for the ground system development, mission operations and science data analysis. The Jet Propulsion Laboratory in Pasadena, Calif., manages the Kepler mission development. Ball Aerospace & Technologies Corp. in Boulder, Colo., is responsible for developing the Kepler flight system and supporting mission operations. NASA's Launch Services Program at NASA's Kennedy Space Center in Cape Canaveral, Fla., managed the launch service including payload integration and certifying the Delta II launch vehicle for NASA's use.

Liftoff of the Delta II rocket carrying NASA's Kepler spacecraft.

Track NASA's Great Moonbuggy Race on Facebook, Twitter, 'Buggy Blog'

By Rick Smith

As student teams around the globe gear up for the 16th annual Great Moonbuggy Race, NASA has launched new online tools to help them share their excitement with friends, family and space enthusiasts – via Facebook, Twitter and a brand-new "Buggy Blog."

The Marshall Space Flight Center launched all three social media activities in February to help spread the word about the event, to be held April 3-4 at the U.S. Space & Rocket Center in Huntsville.

Facebook users can go to the site, look up "Moonbuggy Race" and request "Friend" status to track race preparations and communicate with NASA spokespersons and race hosts. They can also find links to more information about NASA's Apollo-era lunar rovers, the legacy of engineering innovation spawned since their use on the moon in the early 1970s, and NASA's plans for next-generation lunar exploration.

Cellphone and computer users can sign up for Twitter race updates as well, by visiting http://twitter.com/MOONBUGGYRACE.

NASA's Great Moonbuggy Race blog will offer behind-the-scenes pre-race coverage, photos and progress reports from race teams. Visit http://blogs.nasa.gov/cm/blog/moonbuggy.

On race days April 3 and 4, NASA will continue to provide race news via Facebook, as well as up-to-the-minute course-completion times via Twitter as each student team crosses the finish line – helping racers' classmates, families and friends root for them as they vie for the top trophies.

"As the Great Moonbuggy Race grows each year, we strive to share the excitement as far and wide as possible, making it easier than ever for people who can't be here with their teams to track the event in real time," said Tammy Rowan, manager of Marshall's Academic Affairs Office, which oversees the event for NASA. "It's our hope, too, that our online coverage will inspire more schools to take part in years to come."

NASA's Great Moonbuggy Race is one of dozens of educational programs and initiatives led by the Marshall Center each year to help inspire and engage America's next generation of scientists, engineers and explorers – those who will carry on the nation's mission of exploration, to the moon and onward into the solar system.

Smith, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.

STS-119 *Continued from page 1*

shuttle's flow control valve work, initiated after NASA identified damage to a valve on shuttle Endeavour during its November 2008 flight. The three valves installed in Discovery to support the STS-119 mission were cleared of crack indications.

The three flow control valves, one for each space shuttle main engine, channel gaseous hydrogen from the engines through the main propulsion system and back to the external fuel tank. This flow regulation maintains the tank's structural integrity and delivers liquid hydrogen to the engines at the correct pressure.

Shuttle Discovery's STS-119 flight will deliver the space station's fourth and final set of solar array wings, completing the station's truss, or backbone. The arrays will provide the electricity to fully power science experiments and support the station's expanded crew of six beginning with the STS-127 mission, targeted to launch in June. The 14-day STS-119 mission will feature four spacewalks to help install the S6 truss segment to the starboard, or right, side of the station and deploy its solar arrays. The flight also will deliver spare parts to replace a unit for a system that converts urine to potable water.

Archambault is joined on STS-119 by Pilot Tony Antonelli and mission specialists Joseph Acaba, Steve Swanson, Richard Arnold, John Phillips and Japan Aerospace Exploration Agency astronaut Koichi Wakata. Wakata is replacing space station crew member Sandra Magnus, who has been aboard the station for more than four months. She will return to Earth as a mission specialist with the STS-119 crew. Wakata will return to Earth during the next station shuttle mission, STS-127.

Former science teachers Acaba and Arnold are now fully trained NASA astronauts. They are making their first journey to orbit on the mission and will step outside the station to conduct critical spacewalking tasks.

For more information about STS-119 and other upcoming shuttle flights, visit http://www.nasa.gov/mission_pages/shuttle/main/index.html.

Huntsville multicultural affairs officer talks diversity at Marshall

Brenda Martin, multicultural affairs officer for the City of Huntsville, was the guest speaker at the National African-American History Month lunch and learn. She spoke to Marshall Space Flight Center team members about multicultural diversity in Huntsville and her vision for the "One Huntsville" initiative. The initiative is a reaffirmation that citizens within the city – standing together for a common purpose – can transcend racial, geographical and cultural differences to create equal opportunities for the progress of the community. The goal is to achieve more neighborhood involvement in making decisions that will impact Huntsville.

POC

Continued from page 1

the space station and researchers on the ground accomplish their science goals since 2001.

The team also coordinates science activities between NASA and its international partners. In the past year, payload team members' responsibilities have grown as the size of the space station has expanded. In 2008, astronauts delivered and installed the European Space Agency's Columbus laboratory and the Japanese Aerospace Exploration Agency's Kibo module. To date, the team has worked with 17 station crews and supported more than 200 scientific experiments.

"Coordinating all of the NASA science activities on the station is a critical job, and our mission is to help crew members attain the best science results within the resource constraints inherent in manned spaceflight," said Jay Onken, manager of the Mission Operations Laboratory in Marshall's Engineering Directorate, which oversees the payload team. "The amount of science data received up to this point has been overwhelming.

"We know the science community, space station crews and the other flight control teams depend on us. All the members of the Payload Operations Center, past and present, can be proud of having made a significant contribution to the mission of the International Space Station," Onken added.

The Payload Operations Center at Marshall is one of five flight control centers around the world monitoring all space station activities. The Huntsville team, along with their peers at the Johnson Space Center in Houston; the Russian Mission Control Center in Moscow; the European Columbus Control Center in Oberfaffenhoffen, Germany; and the Japanese Control Center in Tsukuba, Japan, work as one team.

In addition to ensuring science activities are carried out, the Marshall team provides the Backup Control Center for the space station. This capability is activated when the Mission Control Center in Houston must be evacuated and shut down in an emergency.

In September 2008, for example, just three weeks after its certification, the Backup Control Center at Marshall was activated during Hurricane Ike. More than 30 flight control team members from Johnson relocated to Marshall to continue operating the space station, including the docking of a Russian Progress resupply vehicle.

The Marshall team is now planning the beginning of six-person crew operations on the space station later this year. And with that milestone, a whole new variety of science experiments are on tap.

"It's an exciting time for the space station, and with every new crew member and every new experiment, we hope to learn more about how to live and work in space," added Onken. "It's an honor to be part of it all."

Meggs, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.

Launch abort system pathfinder makes stop in Nashville

Jeremy Rousseau, launch abort system motor deputy of the Orion Launch Abort System Project office at the Marshall Space Flight Center, talks to visitors at the Adventure Science Center in Nashville, Tenn., about the Orion launch abort system pathfinder. The pathfinder is a full-scale mock-up of the abort system. It traveled across country from Langley Research Center, Va., to White Sands Missile Range, N.M., where it will help NASA prepare for this year's test of the abort system, called Pad Abort 1.

Classified Ads

To submit a classified ad to the Marshall Star, go to Inside Marshall, to "Employee Resources," and click on "Employee Ads — Submit Ad." Ads are limited to 15 words, including contact numbers. No sales pitches. Deadline for the next issue, March 19, is 4:30 p.m. Thursday, March 12.

Miscellaneous

Men's titanium wedding band, size 10.5, sizing available, $200. 221-1401

Lands End firewood rack, round steel tubing, holds one chord, $50. 776-7248

Burgundy satin prom dress, silver ornamentation, long, strapless, size 6, adjustable. 541-4445

Firewood, $80 per truckload. 755-0050

UASON hard-shell bedcover, black, fits 2001-04 Toyota Tacoma double cab, $350 obo. 883-7851

Wedding dress, $600; stepper exerciser, $60; water fountain, $300. 651-4723

Treadmill, $300. 684-6006

Jones Valley Pool membership, $500. 468-0854

2009 NWTF print, "Always Alert II," by Stephen Hamrick, $125 obo. 891-1073

Matching baby cribs, wood, convert into toddler beds, mattresses; Diaper Genie, $20. 551-0276

Glass-top metal tables, $640. 464-9408

Gateway Desktop PC - XP Pro, 80-GB hard drive, dual CD/DVD, 18-inch monitor, $150. 313-655-7966

18.3 Frigidaire refrigerators, white, $195; Paintball auto loader, $10; Paintball full mask, $10. 527-0110

Grass-fed, free-range steer. 931-438-8792

Black Angus bull, grass fed, no hormones, approximately 500 pounds, will deliver to processor, $650. 572-5734

Wurlitzer spinet piano, $500. 468-3749

14K diamond wedding ring, appraised at $11,307, picture/appraisal copy available per e-mail, $8,000 obo. 509-2536

Stackable laundry center, washer, electric dryer. 205-522-7028

Broyhill white kitchen hutch, glass sides/doors/shelves, $325; five-piece white indoor wicker set, $350. 975-1667

Cirque du Soleil box seats for Saltimbanco, VBC, April 17, 7:30 p.m., face value. 444-0776

Ethan Allen sofa, matching recliner, large desk, bed, mirrors, more. 233-0705

Digital photo frame, 3.5 inches, portable, $20; HP All-in-One printer, display, $48. 417-4828

2007 Toro Z528 mower, commercial grade, zero turn, 27HP, 60-inch cutting deck, $5,900 obo. 232-0246

Vehicles

2008 Mustang GT Coupe, silver, leather, six-disc premium sound, Sirius, Bluetooth, 6,600 miles, $22,900. 724-1789

2007 Mazda3, galaxy gray, 36k miles, $13,500. 425-3727

12-foot Bass tracker boat, trolling motor, battery, fish finder, $1,500. 221-1401

2006 BMW 325i, white/tan, loaded, 42k miles, $21,000. 883-6894 or 468-6894

2006 SL55 Mercedes AMG, loaded, hardtop convertible, silver, 14k miles. 830-5999

2005 Ford Five Hundred Limited, AWD, leather, power moon roof, 44k miles, $12,500. 975-1667

2001 Grand Marquis LS, metallic champagne gold, 37k miles, $8,500. 233-3247

2001 Chevy Blazer LT, white, gray leather interior, 145k miles, $4,500. 426-3023

2000 Mercedes ML430 SUV, white, leather, sunroof, CD changer, navigation, entertainment system, $7,995 obo. 520-2802

1998 Stingray RS180, 18 feet, new 140HP engine, http://huntsville.craigslist.org/boa/1058467166.html, $10,500. 640-6427

1998 Mercury Sable, white, gray interior, 55k miles, $4,300. 880-9025

1997 Chevrolet Z71, extended cab, red, leather, oversized tires, 190k miles, $5,650. 227-4612

1997 Stratos Bass boat, 175HP Evinrude, trolling motor, two depth finders, trailer, $8,500. 762-0773

1996 Ford T-bird, V6, auto, A/C, power, $1,750. 464-8649

1987 Honda Goldwing Aspencade, less than 43k miles, saddlebags need paint job, $2,000. julieg1227@gmail.com or 504-432-6675

1978 Chrysler Newport, 83k original miles, $3,000 obo. 851-7998

Wanted

2003 VW Beetle painted alloy wheel, 16-inch curved spoke design. 565-9806

Washer, dryer, refrigerator, lawn mower, yard clippers, king bed. 720-352-4038

Shuttle Buddies to meet March 23

The Shuttle Buddies will meet at 8:30 a.m. March 23 at Mullins Restaurant on Andrew Jackson Way. For more information, call Deemer Self at 881-7757.

Space shuttle Endeavour astronauts recount their space station mission during Marshall visit March 5

By Sanda Martel

Space shuttle Endeavour crew members who flew the STS-126 space shuttle mission to the International Space Station in November visited the Marshall Space Flight Center on March 5 to recount the highlights of their flight.

Commander Christopher J. Ferguson; pilot Eric A. Boe; and mission specialists Donald R. Pettit and Heidemarie M. Stefanyshyn-Piper told of their 15-day mission to a filled-to-capacity Morris Auditorium in Building 4200.

Marshall Center Deputy Director Robert Lightfoot introduced the astronauts to the Marshall team. The audience also included students from Chapman Middle School in Huntsville, and students from Puerto Rico who were attending Space Camp at the U.S. Space & Rocket Center in Huntsville.

STS-126, known as an "extreme home improvement" mission, delivered equipment that expanded the orbiting space station complex to enable larger crews for long-duration missions.

"We turned a three-bedroom, one-bathroom home for three into a five-bedroom, two-bath residence for six, without trips to Home Depot or Lowe's," joked Ferguson.

The astronauts visited the engineering team in Marshall Center's Engineering Directorate that helped develop and manage the Water Recovery System that was delivered and installed by the STS-126 crew during their mission. It is the second part of a comprehensive life support system that provides the station crew with clean drinking water through a series of chemical treatment processes.

The crew members also visited the Materials and Processes Laboratory team that helped isolate the cause and resolution of a contamination problem of solar array hardware on the space station. The arrays track the sun to provide power to the space station. The Marshall team performed unique exams on the flight hardware, helping define the root cause of difficulties experienced with the space station solar array flight hardware.

Chip Moore, right, lead engineer for the Marshall Center's Tribology Team, displays Solar Array Rotary Joint trundle bearings returned from the International Space Station for inspection by Marshall engineers. Observing, from left, are STS-126 astronauts Christopher Ferguson, Eric Boe, Heidemarie Stefanyshyn-Piper and Donald Pettit.

The space station starboard Solar Alpha Rotary Joint, or SARJ, experienced problems with its bearings soon after installation, causing an increase in vibration on orbit. The Marshall team found that debris was the cause, and suggested to a NASA-led investigation team that the debris was coming from the bearing itself. The NASA team concluded that the most probable cause of damage was the lack of adequate lubrication between the trundle bearings and the race ring surface that connects the bearings to the joints.

The STS-126 mission included four successful spacewalks devoted to cleaning and lubricating the rotary joints.

The STS-126 crew also included mission specialists Steve G. Bowen, Robert S. (Shane) Kimbrough and Sandra H. Magnus. Magnus remained on the station, replacing Expedition 17/18 Flight Engineer Gregory E. Chamitoff, who returned to Earth with the STS-126 crew.

Martel, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.

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